

In re Patent Application of:
HARLEY R. MYLER, et al
Serial No. 09/911,575
Filing Date: 7/25/2001

In the Claims:

1. (original) A method for correcting errors in digital video for a received video stream without reference to a source video stream, the method comprising:

receiving a plurality of digital video frames, the plurality of digital video frames comprising a portion of the received video stream and having at least one intercut sequence; and

within one of the at least one intercut sequence(s),

applying a quality analysis technique to at least two of the plurality of digital video frames to produce at least one video quality metric;

determining whether each video quality metric indicates presence of a degraded frame; and

for each video quality metric indicating the presence of a degraded frame, identifying the degraded frame.

2. (original) The method of Claim 1, further comprising:

identifying each of the at least one intercut sequence(s) in the received plurality of digital video frames.

3. (original) The method of Claim 1, wherein applying a quality analysis technique to at least two of the plurality of digital video frames to produce at least one video quality measurement includes:

determining a peak signal to noise ratio.

4. (original) The method of Claim 1, wherein applying a quality analysis technique to at least two of the plurality of digital video frames to produce at least one video quality measurement includes:

applying a Gabor transform to the at least two of the plurality of digital video frames.

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5. (original) The method of Claim 1, wherein applying a quality analysis technique to at least two of the plurality of digital video frames to produce at least one video quality measurement includes:

applying Marr-Hildreth and Canny operators to the at least two of the plurality of digital video frames.

6. (original) The method of Claim 1, wherein applying a quality analysis technique to at least two of the plurality of digital video frames to produce at least one video quality measurement includes:

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applying fractal decomposition to the at least two of the plurality of digital video frames.

7. (original) The method of Claim 1, wherein applying a quality analysis technique to at least two of the plurality of digital video frames to produce at least one video quality measurement includes:

applying Mean Absolute Difference analysis to the at least two of the plurality of digital video frames.

8. (original) The method of Claim 1, wherein applying a quality analysis technique to at least two of the plurality of digital video frames to produce at least one video quality measurement includes:

determining a correlation coefficient for at least one pair of the at least two of the plurality of video frames.

9. (original) The method of Claim 1, wherein identifying the degraded frame includes:

applying a quality analysis technique to at least one of the at least two of the

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plurality of digital video frames and to at least a third one of the plurality of digital video frames.

10. (original) The method of Claim 1, further comprising:
correcting the degraded frame.

11. (original) The method of Claim 10, wherein correcting the degraded frame includes:

removing each of the degraded frame.

12. (original) The method of Claim 10, wherein correcting the degraded frame includes:

obtaining a replacement frame for the degraded frame.

13. (original) The method of Claim 12, wherein the replacement frame is obtained from the source video stream.

14. (original) The method of Claim 10, wherein correcting the degraded frame includes:

identifying a degraded portion of the degraded frame;
identifying at least one from the plurality of the digital video frames containing an undegraded portion corresponding to the degraded portion of the degraded frame; and
replacing the degraded portion of the degraded frame with the undegraded portion.

15. (original) The method of Claim 10, wherein correcting the degraded frame includes:

identifying a predetermined degradation in the degraded frame; and

correcting the predetermined degradation.

16. (original) The method of Claim 15, wherein the predetermined degradation includes one selected from a group consisting of a blocking effect, mosquito noise, and motion compensation noise.

17. (original) The method of Claim 2, wherein identifying the at least one intercut sequence includes:

identifying at least one cut in the received plurality of digital video frames.

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18. (original) The method of Claim 17, wherein identifying at least one cut in the received plurality of digital video frames includes:

comparing at least a first one of the plurality of digital video frames to at least a second one of the plurality of digital video frames to produce at least one correlation coefficient;

comparing each of the at least one correlation coefficient to a predetermined range; and

for each of the at least one compared correlation coefficient falling outside the predetermined range, identifying at least one frame corresponding to a cut in the received plurality of digital video frames.

19. (original) The method of Claim 18, wherein each of the at least one correlation coefficient is normalized.

20. (original) The method of Claim 19, wherein each of the at least one correlation coefficient is normalized on a scale of 0 to 1.

21. (original) The method of Claim 20, wherein the predetermined range is approximately 0 to 0.9.

22. (original) The method of Claim 17, wherein the received video stream includes metadata stream information, and wherein identifying at least one cut in the received plurality of digital video frames includes:

analyzing the metadata stream information.

23. (original) The method of Claim 1, wherein the source video stream is processed to produce the received video stream.

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24. (original) The method of Claim 23, wherein the source video stream is processed to produce the received video stream by passing the source video stream through a channel.

25. (original) The method of Claim 23, wherein the source video stream is processed to produce the receive video stream by applying a hypothetical reference circuit to the source video stream.

26. (original) A system for correcting errors in digital video, the system comprising:
a source video stream;
a channel for operating on the source video stream to produce a received video stream;
a repository for storing information from the received video stream; and
a processor for analyzing the received video stream;
wherein a plurality of digital video frames are received by the processor, the plurality of digital video frames comprising a portion of the received video stream and

having at least one intercut sequence;

wherein, within one of the at least one intercut video sequence(s), the processor applies a quality analysis technique to at least two of the plurality of digital video frames to produce at least one video quality metric;

wherein the processor determines whether each video quality metric indicates presence of a degraded frame; and

wherein, for each video quality metric indicating the presence of a degraded frame, the processor identifies at least one degraded frame.

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27. (original) The system of Claim 26, wherein the channel comprises a circuit.

28. (original) The system of Claim 26, wherein the repository comprises a database.

29. (original) A system for correcting errors in digital video for a received video stream without reference to a source video stream, the system comprising:

means for receiving a plurality of digital video frames, the plurality of digital video frames comprising a portion of the received video stream and having at least one intercut sequence; and

within one of the at least one intercut sequence(s),

means for applying a quality analysis technique to at least two of the plurality of digital video frames to produce at least one video quality metric;

means for determining whether each video quality metric indicates presence of a degraded frame; and

for each video quality metric indicating the presence of a degraded frame, means for identifying the degraded frame.
